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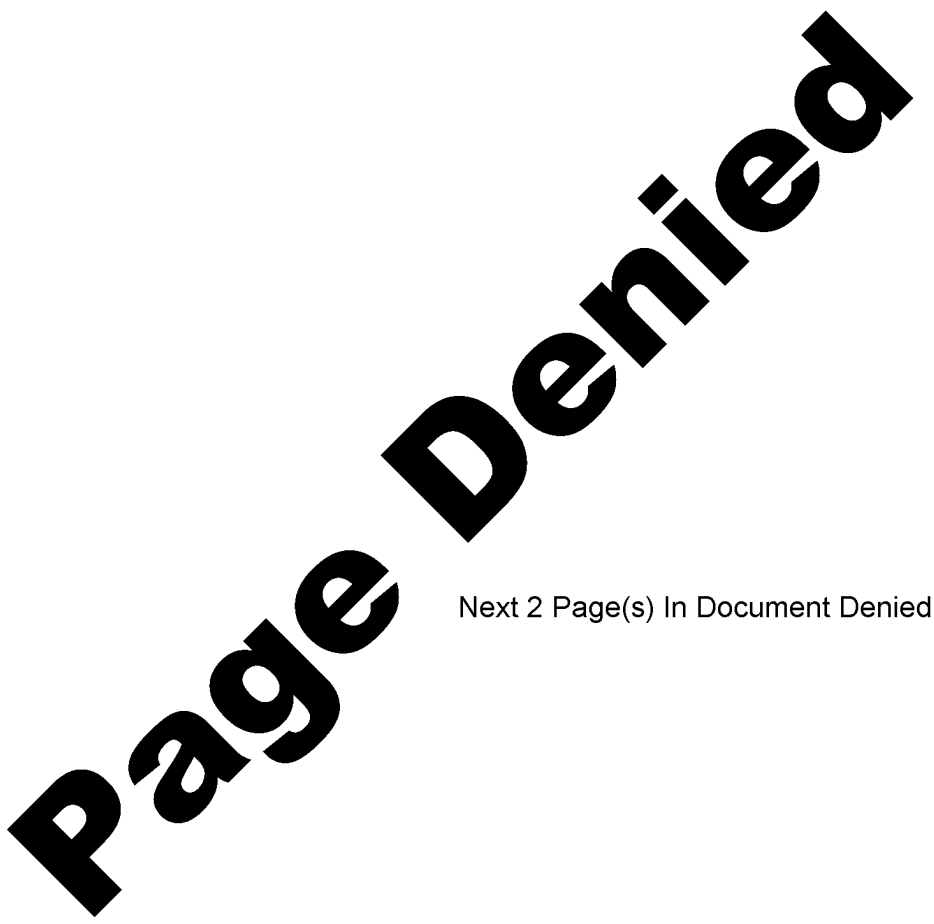

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SUBJECT

MILITARY THOUGHT (USSR): The Use of Statistical Data in Researching the Organization of Troop Control Organs

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The Use of Statistical Data in Researching the Organization of Troop Control Organs

by

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It can easily be shown that a statistical method can be used to reveal the true capabilities of existing control organs, expose their weak points, and determine the optimal make-up and structure of these organs with both the available as well as with future control equipment. The conclusiveness of statistics creates conditions for effectively counteracting subjective influences on establishing or changing tables of organization. Therefore, statistics should be used as fully as possible in the search for the optimal structure of control organs.

We should note first of all that in order to determine the structure and quantitative composition of one or another control organ, it is necessary to establish the numerous functions which they will perform during a period of combat actions and the time required to carry out these functions. Using the examination of an individual function as a starting point and limiting our study of the total number of possible questions to the framework of one control element, for example, the operations directorate of a front staff, we will attempt to determine what is involved in planning and carrying out combat actions in a front offensive operation. Then we will group the functions first into small and then into larger groups according to indications of their similarity until the structure of the entire directorate is established and the total average daily extent of its work is determined.

As is known, the officers of an operations directorate are concerned with the collection, processing, analysis, and reporting of various types of situation data to the appropriate supervisors and executors. Statistical calculations show that this requires an average of 240 man-hours per day. In addition, in order to plan an operation the directorate officers must perform a whole series of calculations involving the determination of the number of nuclear warheads required for an operation, the combat capabilities of the troops and relative strengths in forces and means, and expected and actual losses; they must perform calculations for regrouping, for the commitment to the engagement of second echelons and reserves, for negotiating zones of radioactive contamination, making assault crossings of water obstacles, dropping (landing) airborne and amphibious forces, etc. An average of 130 man-hours is spent daily on

these functions as well as on the preparation of various types of reference data.

The operations directorate develops the operational directive, the plan for the operation and other planning and combat documents which may require an additional 110 man-hours per day. In addition, its officers participate in reconnaissance, in organizing cooperation, in transmitting tasks to the troops, in rendering them assistance and in monitoring their actions, which requires an average of 50 man-hours daily. The directorate also performs a number of other assignments on which up to 60 man-hours per day may be spent.

If all of these functions are grouped according to their organic similarity they would comprise five groups: the first group would consist of the collection, analysis, and reporting of situation data; the second -- the preparation of operational-tactical calculations and reference materials; the third -- the development or formulation of a decision and documents for troop control; the fourth -- participation in reconnaissance operations, in organizing cooperation, transmitting tasks to the troops, rendering them assistance and in monitoring; the fifth -- other functions. These groups of tasks predetermine the organizational structure of the directorate. Since it can easily be seen that the second and third groups comprise purely operational functions, they would best be performed by one team of officers which, for organizational purposes, might make up a department. Usually such a department is called an operations department. Its total daily functions require 240 man-hours.

The first group includes information functions; they may be performed independently or jointly with the fourth group of functions which basically involve the presence of officers with the troops, that is, they are concerned with the work of axis officers. Since the collection of information is for the most part the responsibility of officers of the axes, it would be best if both of these groups of functions, which require a total of 290 man-hours per day, were united and placed in an independent department which could be called a department of axis-information officers, or simply of information officers.

The functions comprising the fifth group may be roughly divided equally among the two departments named above. Then the total amount of work performed by each department would be increased by 30 man-hours and would equal: 270 man-hours for the operations department and 320 man-hours for the department of axis-information officers. 50X1-HUM

Of course, a different grouping of departments is possible. For example, the first group of functions could be performed by an independent department -- the information department, and the fourth group by the department of axis officers. Then the operations directorate would consist not of two but of three departments (operations, information, and axis officers), although we believe the first grouping would be more advantageous. The work of all departments is closely related. They are therefore united under a single directorate -- the operations directorate.

Having grouped the departments and determined the volume of their work, it is still necessary to determine the number of personnel that will make up the departments. This requires a consideration of the length of an officer's working day. Combat practice and the results of postwar exercises show that an officer can work at full efficiency about 15 hours a day during a period of combat actions. The remaining time is spent in sleeping, eating, sanitation and hygiene requirements and moving between shifts in command post duty. An officer's work day may be increased to 20 hours during the more tense days of an operation. In this case he would require additional rest on the following day; otherwise the situation would lead unavoidably to a decrease in his productivity and even to a temporary loss of his ability to function during a subsequent period.

Having established the length of the work day (15 hours), it is possible to determine the total number of departments and directorates needed by dividing the total volume of their work by 15. Thus, an operations department must have 18 officers (270:15) and a department of axis-information officers would need 21 officers (320:15). The total number required by the operations directorate of the staff of a front would be 39 officers, including the chief of the directorate and his deputy whose functional duties are taken into account in analyzing the operation of the directorate as a whole. All other departments and directorates may be analyzed in a similar manner.

As a result of the statistical processing of a large amount of material collected in the troops it has been possible to obtain certain generalized data both on the nature of functional duties as well as the amount of work involved in performing these duties by field headquarters of the army and front in the course of an offensive operation in the Western Theater of Military Operations. This analysis took into consideration the level of development of technical means and control methods which were used at these command levels through 1964.

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Table 1 gives the amount of work and the number of officers required in the field headquarters of an army and a front.

Clearly the amount of work involved in carrying out these functional duties will be reduced as changes are made and more advanced control equipment is introduced, as manual labor is replaced by machines and as troop control methods are improved. There will also appear certain new duties, chiefly with regard to the servicing of technical means of control.

It is known that an operation develops unevenly depending upon the degree of stress. Control organs perform a significantly greater amount of work on days of higher stress than on relatively quiet days. This may be illustrated by data showing fluctuations in the amount of work performed by officers in certain organs of the field headquarters of a front (Table 2).

Determining the quantitative composition of one or another department or directorate solely on the basis of the average daily amount of work without considering the maximum possible work load will not provide complete confidence in the fact that a given department or directorate will be able to handle its job on days when the work load is overly high. Consequently, it is necessary to establish the number of man-hours by which the amount of work may be increased on such days in comparison with an "average" day, how great is the reserve in working time in one or another department or directorate, and whether this reserve is sufficient to carry out the additional work.

If all possibilities of increasing the quality of work (improving organizational ability and methods of operation, interchangeability of officers, etc.) have been exhausted, the only thing remaining for the department (directorate) is to increase the length of the working day of its officers. We have already pointed out that during a period of higher stress in a combat situation, an officer is capable of working for one or two days at a maximum 20-hour load, that is, the length of his work day may be increased by five hours if he is given additional rest or the intensity of work is reduced on subsequent days. For example, if an air defense directorate requires 18 officers (270:15) to perform its average daily assignments and the maximum increase in the amount of its work is 130 man-hours (400-270), then it is easy to determine that an air defense directorate with this complement could not fully cope with its job on days of higher stress, since the additional time that would be derived by increasing the length of the officers' work day would be 90 hours, that is, it would be 40 hours less than required. This means that the directorate must increase its size by a number obtained by dividing the amount of work

unfulfilled (40) by 20 (the maximum length of the work day), that is, by two men, and its full complement would be 20 officers.

We have examined a method of determining the structure and numerical composition of departments and directorates based on the grouping of like or similar functions and the amount of work involved in carrying out these functions. But there are other functions that cannot be performed within a given department alone or even within a directorate. Let us take, for example, the series of measures which must be undertaken in planning the employment of nuclear weapons for the purpose of combating the nuclear weapons of the enemy. It encompasses a group of matters which requires the participation of the commander, the chief of staff, the operations and intelligence directorates, the staff of the air army, the staff of the rocket troops and artillery, and the directorates of missile and artillery armament, chemical and engineer troops, and others.

The extent of participation in such planning by the main executors of a field headquarters of a front may be expressed by the data given in Table 3.

Apart from the command, those having the greatest participation in carrying out these functions are the directorate of the chief of the rocket troops and artillery, the operations directorate, the directorate of the chemical troops and the intelligence directorate. Therefore, they obviously must work in close contact with each other under the common direct or operational supervision of the chief of staff. From this viewpoint the directorate of the chemical troops will be drawn more closely to the staff than, let us say, the directorate of the engineer troops and more frequently will be required to contact and function jointly with the directorates of the staff. In the same way one may analyze the volume of work related to the performance of other important groups of tasks, each of which is carried out jointly by several directorates (for example, the commander's adoption of a decision for an operation, operational, technical and materiel support, etc.). Data on the amount of work to be performed, reduced to analogous tables, will give some idea of the extent of participation of departments (directorates) in controlling the troops. Those departments and directorates that take the greatest part in carrying out the main tasks of controlling the troops and whose functions are more closely related must naturally assume a key position in the structure of the field headquarters and be joined organizationally with each other.

In analyzing the performance of similar and overlapping functions by several control organs, one comes upon redundant, parallel tasks. Such

functions are most clearly seen if one compares the functions of the communications directorate and the 8th department. The work of the 8th department has become so closely interwoven with that of the communications directorate (department) that the former cannot function without the latter. The two elements perform one and the same tasks. Thus, the coding documentation is located in the 8th department, instructions on enciphered communications are generated also in the 8th department, and the secure communications equipment is with the communications troops (at the communications center). The 8th department enciphers the message, then delivers it to the communications center and monitors its passage. The communications duty officer also has the duty of monitoring the passage of the message. In one research exercise 80 percent of the cipher messages sent in one day were transmitted over the secure communications channels. The following pattern developed: the initiator handed the message to the 8th department, there it was enciphered and sent to the traffic office of the communications center from which the cipher message was transmitted over the secure communications equipment to the addressee, that is, the message was again automatically enciphered in the communications channel. The opposite procedure was observed at the other end. Thus, the message was enciphered twice and deciphered twice; 80 percent of the messages were unnecessarily delayed by the cipher offices.

The secure communications equipment in the offices of the communications troops is capable of automatically enciphering all the information passing through the 8th department. Therefore, there is no need for manual enciphering and consequently no need for an independent 8th department, the work of which could be handled more successfully by the directorate (department) of the chief of the communications troops. The unification of these organs within the technical base of the communications troops would prevent duplication and parallel functions, and would free up to 19 men in the field headquarters of a front and about six men in an army headquarters for other duties.

Other examples of parallelism and redundant work could be given. Let us take just this one. At one time the posts of missile officer and radiation situation forecasting officer were introduced in the table of organization of the operations directorate, apparently for the purpose of creating more favorable conditions for cooperation between the operations directorate, the staff of the rocket troops and artillery and the directorate of the chemical troops. But the result was the opposite. The presence of these officers was simply ignored, but the need for close cooperation between the most important control organs at the required level was not lessened. It is well known that the more serious a problem and the

more rapidly it must be solved, the greater the need for direct contacts between the responsible assigned personnel who have the authority to quickly make decisions or make suggestions to the commander. In resolving the most important questions, such as the employment of means of mass destruction and combat against them, contacts between superiors must not be replaced by contacts between intermediaries or information officers who have no authority whatsoever. This could lead to a loss of time and a delay in the commander's reaction to a situation.

The trend toward the unification and concentration of authority in the hands of a small number of people is becoming even stronger as new means of combat are introduced into the troops and as troop control acquires new control equipment which will permit the operational direction of large groupings of troops and their supply with materiel and equipment. In light of this tendency it would be interesting to continue our analysis of the grouping of functions and see where it will lead.

In principle, all functions of the field headquarters at the operational and tactical levels (these functions may add up to several thousand) may be combined into three large groups on the basis of indications of their similarity: operational, rear area and training. There is another group involving punitive functions, but it is not a main one and is carried out by personnel who are not included in the tables of organization of field headquarters. We will consider only the first two groups -- operational and rear area, and will examine their make-up and relationship.

Operational functions are those performed by operations, reconnaissance, communications, and radioelectronic warfare organs as well as those organs that control the means of destruction and defense (staff of the rocket troops and artillery, the directorates of the chiefs of the air defense, engineer and chemical troops). With the exception of the training functions, all other functions, namely, the selection and placement of personnel, manning and record-keeping, technical support (performed by the armored and motor vehicle-tractor directorate), materiel support (by the directorate of missile and artillery armament and a majority of the organs under the chief of the rear), medical support (by the medical and veterinary services), and finance -- may be placed in the large family of rear area functions. At the same time, statistics show that the higher the level of control, the more it will acquire the functions of the rear organs. If the ratio in volume of work of rear area functions to operational functions is 1.1:1 for an army field headquarters (on the basis of the existing tables of organization), the ratio would increase to 1.6:1

for a front field headquarters. But a significant part of the rear area functions are scattered and are performed under the supervision of different chiefs who are not united under a single command. Apart from the commander and the chief of the rear, those who supervise rear area functions are: the deputy commander for technical matters, the chief of the rocket troops and artillery, the chief of the political directorate and the chiefs of the communications, engineer and chemical troops and the topographic service. It is clear that the coordination of actions would be difficult under such conditions. This, therefore, suggests the conclusion that all rear area functions should be combined under a single authority.

The development of control organs is proceeding precisely in this same direction, that is, in the direction of the unification of all operational functions in the hands of the chief of staff and all rear area functions in the hands of the chief of the rear. Apparently all commanders of the branch arms and services are gradually being united according to their purpose under the supervision of the chief of staff and the chief of the rear. Then, subordinate to the commander there would remain his deputies and the chiefs of the staff, the rear and the political directorate. The commander would have more time to develop concepts and command the troops. But in order to arrive at such centralization it will be necessary first to find a method of controlling these extremely complex and diverse functional tasks.

It is clear to everyone that the dispersal of rear area functions among the different branch arms and services reduces their operating efficiency and detracts from the performance of combat tasks. But at the same time the unification of such a large number of different tasks and the concentration of responsibility for performing these tasks in the hands of a few people is causing apprehension among many that a favorable solution may not be found, and some fear that they will be without missiles, radars, weapons, communications means, etc. during a critical period of combat actions.

It is understandable that with existing means and methods of control it is difficult to solve the problem of unifying all rear area (as well as operational) functions in the hands of a few. However, the rapid development and introduction into the troop control organs of fundamentally new control equipment, which will free the chief of the rear of purely technical operations, will create the possibility and the inevitability of such unification in the future. The unification of all rear area functions will certainly lead to an improvement in methods of supervision and to a new, probably more simple, economical and improved structure of rear

control organs, to a significant reduction in their personnel, and to an increase in operating efficiency.

Above we spoke about individual organs of field headquarters of operational formations. But what about the actual capabilities of the field headquarters of a front and army on the whole; are they capable of handling the problems of troop control which will arise in the event of war? If we take as the criteria for evaluating these capabilities the statistical data on the troops, a part of which was given in the accompanying table, and on the basis of these data assign a value of 100 percent to the quantitative composition of the control organs, and then compare this value with the capabilities of existing wartime tables of organization, we would obtain the following relationships: 100:82 for the field headquarters of a front, and 100:65 for the field headquarters of a combined-arms army. This means that with the existing tables of organization, during the tense period of combat actions, at the front level 18 percent of the troop control functions will not be performed, and at the army level -- 35 percent of the troop control functions. In other words, there is a disproportion between the amount of work that is actually required and the true capabilities of the organic control organs.

This disproportion can be eliminated by equipping the control organs with modern technical means and by improving their methods of operation. Attempts are also being made to solve this problem simply by increasing the number of personnel in the control organs. But an increase in personnel alone does not always bring about an increase in the operating efficiency of the staffs. In a modern operation the control organs must perform a series of functions with a speed and frequency which are beyond human psychological and physiological capabilities. It is impossible to operate without the aid of a high-speed computer, for example, in solving problems of air defense, in the employment of rocket troops, in forecasting the radiation situation, in processing large amounts of information in a limited period of time, etc., that is, in performing the most important functions of control. Therefore, increasing the number of personnel will lead unavoidably, in the final analysis, not to an improvement in one's position, but to an increase in the vulnerability of the control organs and a decrease in their operating efficiency, since an increase in people leads abruptly to an increase in self-service functions, that is, jobs that are created and performed by some people for others. 50X1-HUM

In conclusion we would like to say that if statistical data can serve, as has been shown, as the basis for important and far-reaching conclusions, then they must be objective, reliable and accurate. The collection of

different values and their mathematical processing will not give a true picture if chance information is used as the basis. They must systematically be checked, reviewed and refined. This is a time-consuming and difficult task, the performance of which requires more than just the enthusiasm of individual institutions that are not directly connected with the primary sources of the information -- the troops. Organizational measures must be undertaken to continue the work that has been started.

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Table 1

Departments (directorates)	Army		Front	
	Average amount of work, man-hours	Officers required	Average amount of work, man-hours	Officers required
Operations department (directorate)	405	27	590	39
Intelligence department (directorate -- without special intelligence functions)	200	13	660	44
Department (directorate) of communications	280	19	720	48
Department (directorate) of organizational records and manning	211	14	404	27
Electronic warfare section (department)	86	6	128	9
Topographic section (department)	63	4	200	13
Staff of the rocket troops and artillery	287	19	350	23
Department (directorate) of missile and artillery armament	260	17	524	35
Air defense department (directorate)	204	14	270	18
Department (directorate) of engineer troops	163	11	292	19
Department (directorate) of chemical troops	147	10	280	19
Directorate of the deputy commander for technical matters	450	30	790	33
Personnel department (directorate)	140	9	270	18
Staff of the rear	118	8	480	32
Department (directorate) of military transportation	73	5	727	48
Department (directorate) of rations supply	105	7	265	17
Clothing and equipment supply department	45	3	210	14
POL department (directorate)	86	6	326	22
Military medical department (directorate)	200	13	363	24

Table 2

Name of Directorate	Daily Amount of Work, Man-Hours		
	Minimum	Maximum	Average (Optimal)
Operations directorate	400	860	590
Staff of the rocket troops and artillery	260	580	350
Directorate of the chief of air defense troops	210	400	270

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Table 3

	Daily amount of work, man-hours	Percentage of total amount of work of the directorate (executor)
Commander	4	20
Chief of staff	4	20
Staff of the rocket troops and artillery	210	80
Operations directorate	170	30
Directorate of chemical troops	120	40
Directorate of missile and artillery armament	115	20
Intelligence directorate	100	15
Directorate of engineer troops	25	10

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